

CITY OF REDMOND
STANDARD SPECIFICATIONS
WATER AND SEWER SYSTEM EXTENSIONS

**An Addendum to the WSDOT/APWA, 2000 Standard Specifications for Road,
Bridge, and Municipal Construction (English)**

**Adopted by the City of Redmond
Utilities Division of the
Public Works Department
September 2000**

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DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
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7-05 MANHOLES, INLETS, AND CATCH BASINS

7-05.1 Description

Modify this section by deleting the words “and as staked by an Engineer”.

7-05.2 Materials

There are no amendments or modifications.

7-05.3 Construction Requirements

There are no amendments or modifications.

7-05.3(1) Adjusting Manholes and Catch Basins to Grade

There are no amendments or modifications.

7-05.3(2) Abandon Existing Manholes

There are no amendments or modifications.

7-05.3(3) Connections to Existing Manholes

There are no amendments or modifications.

7-05.3(4) Drop Manhole Connection

Modify this section by deleting the last sentence and substitute the following:
"Ductile iron pipe shall be used for all drop connections and shall be extended to
the next upstream manhole."

7-05.4 Measurement

There are no amendments or modifications. (Project special provisions may
modify this section.)

7-05.5 Payment

There are no amendments or modifications. (Project special provisions may
modify this section.)

DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
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7-08 GENERAL PIPE INSTALLATION REQUIREMENTS

7-08.1 Description

There are no amendments or modifications.

7-08.2 Materials

There are no amendments or modifications.

7-08.3 Construction Requirements

7-08.3(1) Excavation and Preparation of Trench

There are no amendments or modifications.

7-08.3(1)A Trenches

There are no amendments or modifications.

7-08.3(1)B Shoring

There are no amendments or modifications.

7-08.3(1)C Pipe Zone Bedding

There are no amendments or modifications.

7-08.3(2) Laying Pipe

7-08.3(2)A Survey Line and Grade

Delete the first subparagraph and substitute the following:

"Survey line and grade control hubs shall be provided by a survey crew working under the direction of a licensed land surveyor or licensed Engineer and shall be provided by the contractor."

Delete the second subparagraph and substitute the following:

"The grade shall be maintained by use of a laser. Grades shall be constantly checked and, in the event the grade is not maintained, work shall be immediately stopped until the grade is corrected. Any other procedure shall be approved by the Engineer."

7-08.3(2)B Pipe Laying -- General

There are no amendments or modifications.

7-08.3(2)C Pipe Laying -- Concrete

There are no amendments or modifications.

7-08.3(2)D Pipe Laying -- Steel or Aluminum

There are no amendments or modifications.

7-08.3(2)E Rubber Gasketed Joints

There are no amendments or modifications.

7-08.3(2)F Plugs and Connections

There are no amendments or modifications.

7-08.3(2)G Jointing of Dissimilar Pipe

Delete the paragraph and substitute the following:

"There shall be no jointing of dissimilar pipe materials on City mains. If any section of a manhole-to-manhole run is to be ductile iron, the entire pipe run shall be ductile iron. Jointing of dissimilar pipe materials for side sewers shall be made with flexible couplings as specified in Section 9-30.2(7)."

7-08.3(2)H Sewer Line Connections

There are no amendments or modifications.

7-08.3(2)I Side Sewer Connections

Delete the paragraph and substitute the following:

"Side sewers shall connect to a new City main with a tee fitting. Side sewers shall connect to an existing City main with a Romac CB style sewer saddle or equal. Side sewers shall connect to manholes only when shown on the project drawings."

7-08.3(3) Backfilling

There are no amendments or modifications.

7-08.3(4) Plugging Existing Pipe

There are no amendments or modifications.

7-08.4 Measurement

There are no amendments or modifications. (Project special provisions may modify this section.)

7-08.5 Payment

There are no amendments or modifications. (Project special provisions may modify this section.)

DIVISION 7
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WATERMAINS AND CONDUITS

7-09 **PIPE AND FITTINGS FOR WATER MAINS**

7-09.1 **Description**

There are no amendments or modifications.

7-09.2 **Materials**

Modify this section by deleting the following pipe and fitting materials:

"Polyvinyl Chloride (PVC) Pipe (4 inches and over)"

Modify this section by substituting the name of the following section:

"Tapping Tee.....9-30.3(8)"

7-09.3 **Construction Details**

There are no amendments or modifications.

7-09.4 **Measurement and Payment**

There are no amendments or modifications.

DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
WATERMAINS AND CONDUITS

7-10 TRENCH EXCAVATION, BEDDING, AND BACKFILL FOR
WATERMAINS

7-10.1 Description

There are no amendments or modifications.

7-10.1(1) Definitions

There are no amendments or modifications.

7-10.1(1)A Trench Widths

There are no amendments or modifications..

7-10.1(1)B Unsuitable Material

There are no amendments or modifications..

7-10.1(1)C Bedding

There are no amendments or modifications..

7-10.1(1)D Backfill Materials

There are no amendments or modifications..

7-10.2 Materials

There are no amendments or modifications.

7-10.3 Construction Details

7-10.3(1) General

There are no amendments or modifications.

7-10.3(2) Ungraded Streets

Modify the first subparagraph by deleting the words "and as staked ".

7-10.3(3) Clearing and Grubbing in Ungraded Streets

There are no amendments or modifications.

7-10.3(4) Removal of Existing Street Improvements

There are no amendments or modifications.

7-10.3(5) Grade and Alignment

Modify the second subparagraph as follows:

"...a minimum cover of 36-inches over the top of the pipe for pipe smaller than 12-inches and 48-inches over the top of the pipe for pipe 12-inches and larger."

7-10.3(6) Existing Utilities

There are no amendments or modifications.

7-10.3(7) Trench Excavation

There are no amendments or modifications.

7-10.3(7)A Rock Excavation

There are no amendments or modifications.

7-10.3(7)B Extra Trench Excavation

There are no amendments or modifications.

7-10.3(8) Removal and Replacement of Unsuitable Materials

There are no amendments or modifications.

7-10.3(9) Bedding the Pipe

There are no amendments or modifications.

7-10.3(10) Backfilling Trenches

Delete the third subparagraph and substitute the following...

"Special construction methods shall be used where a water main crosses within 6-inches of new or existing pipelines or conduits. These methods shall include sand backfill, concrete encasement, dense foam or other methods as directed by the Engineer."

7-10.3(11) Compaction of Backfill

There are no amendments or modifications.

7-10.3(12) Controlled Density Fill (New Paragraph)

Add the following:

"Controlled density fill shall be placed full depth and width of trench excavation less any pavement repair section, within the public right-of-way subject to vehicular traffic unless otherwise shown on the plans or directed by the Engineer."

7-10.4 Measurement

There are no amendments or modifications. (Project special provisions may modify this section.)

7-10.5 Payment

There are no amendments or modifications. (Project special provisions may modify this section.)

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DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
WATERMAINS AND CONDUITS

7-11 PIPE INSTALLATION FOR WATERMAINS

7-11.1 General

There are no amendments or modifications.

7-11.2 Materials

There are no amendments or modifications.

7-11.3 Construction Details

7-11.3(1) Dewatering of Trench

There are no amendments or modifications.

7-11.3(2) Handling of Pipe

There are no amendments or modifications.

7-11.3(3) Cutting Pipe

Modify the paragraph by adding the following:

"Cutting of asbestos cement pipe shall conform to all local, state, and federal requirements."

7-11.3(4) Laying of Pipe on Curves

7-11.3(4)A Ductile Iron Pipe

Modify the second, third, fourth sentences of the first subparagraph as follows:

"...can be made by deflecting the joints. The contractor shall determine the length of pipe that must be used so that the amount of deflection at each pipe joint shall not exceed one half (1/2) the manufacturer's printed recommended deflections".

7-11.3(4)B Polyvinyl chloride (PVC) Pipe (4 inches and over)

Delete this section in its entirety.

7-11.3(5) Cleaning and Assembling Joints

There are no amendments or modifications.

7-11.3(6) Laying Ductile Iron Pipe with Polyethylene Encasement

There are no amendments or modifications.

7-11.3(7) Laying Steel Pipe

7-11.3(7)A Threaded Steel Pipe 4 Inch in Diameter and Smaller

There are no amendments or modifications.

7-11.3(7)B Coupled Pipe 4 Inch in Diameter and Larger

There are no amendments or modifications.

7-11.3(9) Connections

7-11.3(9)A Connections to Existing Mains

Modify subparagraph five as follows:

"If the connection to the existing system involves turning off the water, the City shall be responsible for notifying the residents affected by the shutoff. The Contractor shall coordinate turning off the water with the Engineer and shall give two business days notice of intended service interruptions."

7-11.3(9)B Maintaining Service

Delete the existing paragraph and substitute with the following:

"Where existing services are to be abandoned and new services installed which connect to new mains, the contractor shall plan and coordinate its work so that service will be available with the least possible inconvenience to customers. The existing main shall not be abandoned until such time as existing customers are connected to the new main."

7-11.3(9)C Connections to Existing Main -- Wet Tap (New Paragraph)

Connections to the existing water main shall not be made without first making the necessary arrangements with the Engineer in advance. Work shall not be started until all the materials, equipment and labor necessary to properly complete the work are assembled on the site. The tapping tee and valve shall be installed in a horizontal position so that the valve nut is vertical.

7-11.3(10) Detectable Marking Tape

Delete the first sentence of the paragraph and substitute with the following:
"Detectable marking tape shall be installed where specified and as directed by the Engineer."

7-11.3(11) Hydrostatic Pressure Test

Modify subparagraph 7 by adding the following:

"The pressure loss shall not be greater than 15 psi. Tests on short runs of pipe or fire hydrants shall be 5 minutes and the pressure loss shall not be greater than 5 psi."

Modify subparagraph 12 by adding the following:

"The contractor shall schedule the test with the Engineer a minimum of 24 hours in advance of test."

7-11.3(11)A Testing Extensions from Existing Mains

There are no amendments or modifications.

7-11.3(11)B Testing Section With Hydrants Installed

There are no amendments or modifications.

7-11.3(11)C Testing Hydrants Installed on Existing Mains

There are no amendments or modifications.

7-11.3(12) Disinfection of Water Mains

There are no amendments or modifications.

7-11.3(12)A Flushing

There are no amendments or modifications.

7-11.3(12)B Requirement of Chlorine

There are no amendments or modifications.

7-11.3(12)C Form of Applied Chlorine

There are no amendments or modifications.

7-11.3(12)D Dry Calcium Hypochlorite

There are no amendments or modifications.

7-11.3(12)E Liquid Chlorine

There are no amendments or modifications.

7-11.3(12)F Chlorine-Bearing Compounds in Water

There are no amendments or modifications.

7-11.3(12)G Sodium Hypochlorite

There are no amendments or modifications.

7-11.3(12)H Point of Application

There are no amendments or modifications.

7-11.3(12)I Rate of Application

There are no amendments or modifications.

7-11.3(12)J Preventing Reverse Flow

There are no amendments or modifications.

7-11.3(12)K Retention Period

There are no amendments or modifications.

7-11.3(12)L Chlorinating Valves, Hydrants, and Appurtenances

There are no amendments or modifications.

7-11.3(12)M Chlorinating Connections to Existing Water Mains and Water Service Connections

There are no amendments or modifications.

7-11.3(12)N Final Flushing and Testing

There are no amendments or modifications.

7-11.3(12)O Repetition of Flushing and Testing

There are no amendments or modifications.

7-11.3(13) Concrete Thrust Blocking

There are no amendments or modifications.

7-11.3(14) Blowoff Assemblies

There are no amendments or modifications.

7-11.4 Measurement

There are no amendments or modifications. (Project special provisions may modify this section.)

7-11.5 Payment

There are no amendments or modifications. (Project special provisions may modify this section.)

DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
WATERMAINS AND CONDUITS

7-12 VALVES FOR WATERMAINS

7-12.1 Description

There are no amendments or modifications.

7-12.2 Materials

There are no amendments or modifications.

7-12.3 Construction Details

Modify subparagraph 2 as follows:

" . . . as to be supported by ~~a minimum backfill~~ or by a Styrofoam collar not less . .
."

Add the following to the second subparagraph:

A two foot diameter, 4-inch deep pad of Class B asphalt shall be placed around all valve boxes located in unpaved areas unless directed otherwise by the Engineer.

7-12.3(1) Installation of Valve Marker Post

Add the following to the paragraph:

Valve marker posts are required for valves located in unpaved areas, blow off assemblies, and air release/air vacuum valve assemblies. Paint color shall be Far West Paint Company #260, Canary Yellow."

7-12.3.(2) Adjustment of Water Valve Boxes (New Paragraph)

New water valve boxes shall be adjusted in accordance with Standard Detail 718.

In the event existing water valve boxes need to be adjusted due to pavement overlay or patching, it is a requirement that each valve box be inspected by the City prior to work commencing. For inspection purposes, the Contractor shall excavate around all valve boxes selected by the Engineer prior to pavement work. Excavation for inspection is anticipated to be a maximum of 36 inches in diameter

by 24 inches in depth. The actual excavation will vary depending upon field conditions.

After inspection, and prior to pavement work, valve boxes, as designated by the Engineer, shall receive one or more of the following repairs:

- Remove existing valve box and replace with a new valve box meeting the requirements of Section 9-30.3(4) *Valve Boxes* of the Standard Specifications and be installed in accordance with Standard Detail 718.
- Reuse and clear the valve box of all debris and leave the valve in a fully operable condition.
- Center valve box. Where the existing valve box is to remain and is not centered over the valve, the Contractor shall excavate to the water valve and center the valve box over the valve nut.

For each valve box that has been removed or replaced, the Contractor shall install an Etha® foam ring, or approved equal, between the valve box and the water valve as per Standard Detail 718.

Excavation voids resulting from repair or inspection work shall be backfilled with CDF to within 2 inches of finished grade. The top 2 inches shall be ACP Class B.

After final paving, valve boxes shall be adjusted per Section 7-05.3(1) *Adjusting Manholes and Catch Basins to Grade* of the Standard Specifications. All valve boxes shall be adjusted to grade.

Excavation voids resulting from adjustment shall be backfilled with CDF to within 4 inches of finished grade. The top 4 inches shall be ACP Class B.

The ears on the valve box lid shall be oriented to the direction of flow of the water main. The Contractor shall assure the valve box remains clear of all debris and the valve nut is accessible.

7-12.4 Measurement

There are no amendments or modifications. (Project special provisions may modify this section.)

7-12.5 Payment

There are no amendments or modifications. (Project special provisions may modify this section.)

DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
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7-14 HYDRANTS

7-14.1 Description

There are no amendments or modifications.

7-14.2 Materials

There are no amendments or modifications.

7-14.3 Construction Details

7-14.3(1) Setting Hydrants

Modify subparagraph 1 as follows:

"...a minimum 4-foot radius unobstructed..."

Modify subparagraph 4 as follows:

"...be painted with two coats of first quality industry quick dry enamel canary yellow paint, Far West Paint Company #260 or approved equal. Do not paint Storz Adaptor."

7-14.3(2) Hydrant Connections

There are no amendments or modifications.

7-14.3(2)A Hydrant Restraint

Delete this paragraph in its entirety and substitute with the following:

"Hydrant laterals shall be restrained in accordance with paragraph 9-30.2(6)."

7-14.3(2)B Auxiliary Gate Valves and Valve Boxes

Delete this section in its entirety and substitute the following:

"Auxiliary gate valves and valve boxes shall be installed in accordance with section 7-12. End connections shall be as shown on the standard plan and shall be compatible with the restraint system."

7-14.3(2)C Hydrant Guard Posts

Delete the second sentence of the paragraph.

7-14.3(3) Resetting Existing Hydrants

Delete this section in its entirety and substitute with the following:

"Resetting of existing hydrants shall not be allowed. Hydrant assembly shall be constructed as shown on the plans or as directed by the Engineer with all new material. Removed hydrants shall be delivered to the City maintenance and operation facility."

7-14.3(4) Moving Existing Hydrants

Delete this section in its entirety and substitute the following:

"Moving existing hydrants shall not be allowed. Hydrant assembly shall be constructed as shown on the plans or as directed by the Engineer with all new material. Removed hydrants shall be delivered to the City maintenance and operation facility."

7-14.3(5) Reconnecting Existing Hydrants

Delete this section in its entirety and substitute the following:

"Reconnecting of existing hydrants shall not be allowed. Hydrant assembly shall be constructed as shown on the plans or as directed by the Engineer with all new material. Removed hydrants shall be delivered to the City maintenance and operation facility."

7-14.3(6) Hydrant Extensions

There are no amendments or modifications.

7-14.4 Measurement

There are no amendments or modifications. (Project special provisions may modify this section.)

7-14.5 Payment

There are no amendments or modifications. (Project special provisions may modify this section.)

DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
WATERMAINS AND CONDUITS

7-15 SERVICE CONNECTIONS

7-15.1 General

Add the following to the paragraph:

"This section includes meter sizes 2-inch and smaller. This section also includes abandonment of service connections."

7-15.2 Materials

Modify the section by adding the following materials:

Tracer Wire.....9-30.6(8)

7-15.3 Construction Details

Modify the first and second sentence of subparagraph 1 as follows:

"All service connections to water mains shall be made using saddles and shall be of the size and type suitable for use with the pipe being installed."

Modify subparagraph 2 as follows:

"...Excavating and backfilling for service connections shall be as specified in section 7-10, except that the service pipeline shall be installed under pavement, curbs, and sidewalks by boring methods when required in the Plans or Special Provisions. Additionally the contractor may use boring methods at its option."

Delete the last sentence of the 4th subparagraph and substitute with the following:

"The Contractor shall coordinate service interruptions with the Engineer and shall give two business days notice of intended service interruptions"

Add the following paragraphs:

"Service connections shall be constructed in accordance with the City of Redmond Standard Details. A tracer wire shall be connected to the main to make it electrically continuous and extended to the setter. Use fabricated spacers to install the setters the correct distance apart. All meter boxes shall be in unpaved areas unless otherwise shown."

"Abandonment of service connections at the water main shall be accomplished by one of the following methods:

1. Close the corporation stop, remove the water service line from the corporation stop, and cap or plug the corporation stop.
2. Remove the water service line, corporation stop, and saddle. Repair water main with a stainless steel repair band.
3. For direct taps, remove the water service line and corporation stop. Repair water main with a stainless steel repair band.

The method of abandonment shall be as specified by the Engineer."

7-15.3(1) Flushing and Disinfection

There are no amendments or modifications.

7-15.4 Measurement

There are no amendments or modifications. (Project special provisions may modify this section.)

7-15.5 Payment

There are no amendments or modifications. (Project special provisions may modify this section.)

DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
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7-17 SANITARY SEWERS

7.17.1 Description

Modify this section by deleting the words "as staked by the Engineer."

7-17.2 Materials

Modify this section by deleting the following pipe materials:
"vitrified clay, ABS composite."

7-17.3 Construction Requirements

There are no amendments or modifications.

7-17.3(1) Protection of Existing Sewerage Facilities

There are no amendments or modifications.

7-17.3(2) Cleaning and Testing

7-17.3(2)A General

Delete the first subparagraph and substitute the following:
"Sewers and appurtenances shall be cleaned after backfilling and prior to testing.
Testing of sewer mains shall be by the low pressure air test method."

Modify the second subparagraph as follows:
"...perform the tests ~~under the direction and~~ in the presence..."

Add the following to the fifth subparagraph:
"All side sewers constructed in combination with a sewer main shall be tested at
the same time as the sewer main."

7-17.3(2)B Exfiltration Test

Delete this section in its entirety.

7-17.3(2)C Infiltration Test

Delete this section in its entirety.

7-17.3(2)D Other Test Allowances

There are no amendments or modifications..

7-17.3(4)E Low Pressure Air Test for Sanitary Sewers Constructed of Air Permeable Materials

There are no amendments or modifications.

7-17.3(4)F Air Pressure Test for Sanitary Sewers Constructed of Non- Air Permeable Materials

There are no amendments or modifications.

7-17.3(4)G Deflection Test for Thermoplastic Pipe

There are no amendments or modifications.

7-17.3(4)H Television Inspection

Modify the first subparagraph by deleting the words "owner of the sanitary sewer" and substituting the word "City."

7-17.4 Measurement

There are no amendments or modifications. (Project special provisions may modify this section.)

7-17.5 Payment

There are no amendments or modifications. (Project special provisions may modify this section.)

DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
WATERMAINS AND CONDUITS

7-18 SIDE SEWERS

7-18.1 Description

There are no amendments or modifications.

7-18.2 Materials

There are no amendments or modifications.

7-18.3 Construction Requirements

7-18.3(1) General

There are no amendments or modifications.

7-18.3(2) Fittings

There are no amendments or modifications.

7-18.3(3) Testing

There are no amendments or modifications.

7-18.3(4) Extending Side Sewers into Private Property

There are no amendments or modifications.

7-18.3(5) End Pipe Marker

Delete this paragraph and substitute with the following

"The location of the end of side sewers shall be marked by the contractor with a 2" x 4" wooden stake as shown in the standard details."

7-18.4 Measurement

There are no amendments or modifications. (Project special provisions may modify this section.)

7-18.5 Payment

There are no amendments or modifications. (Project special provisions may modify this section.)

DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
WATERMAINS AND CONDUITS

7-19 SEWER CLEANOUTS

7-19.1 Description

There are no amendments or modifications.

7-19.2 Materials

There are no amendments or modifications.

7-19.3 Construction Requirements

Add the following to the third subparagraph:

"Cleanouts shall be extended to grade for all projects except a single family residential side sewer located on the property being served. All cleanouts extended to grade shall be as shown in the standard detail."

7-19.4 Measurement

There are no amendments or modifications.

7-19.5 Payment

There are no amendments or modifications.

DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
WATERMAINS AND CONDUITS

7-20 LARGE METER INSTALLATIONS (NEW SECTION)

7-20.1 General

This work consists of installing the service connection from the water main to the customer's service meter. Service connections for commercial users as well as residential users are included. This section includes meter sizes greater than 2-inch.

7-20.2 Materials

Materials shall meet the requirements of the following sections:

| | |
|-------------------------------|------------|
| Crushed Surfacing Base Course | 9-03.9(3) |
| Ductile Iron Pipe | 9-30.1(1) |
| Ductile Iron Pipe Fittings | 9-30.2(1) |
| Restrained Joints | 9-30.2(6) |
| Flanged Coupling Adapters | 9-30.2(7) |
| Gates Valves | 9-30.3(1) |
| Adjustable Pipe Support | 9-30.4(12) |
| Meters | 9-30.6(9) |
| Borrow Structural Fill | 9-30.7(4) |
| Concrete Vaults | 9-30.4(4) |

7-20.3 Construction Requirements

The excavation for vaults shall be sufficient to leave 1 foot clear between the outer surfaces of the vault and the trench wall. If the material in the bottom of the trench is unsuitable for supporting the vault, remove the unsuitable material as directed by Engineer and replace with ballast. Set the vault to the grade and location shown on the plans. The meter vaults shall be installed plumb and level on the crushed surfacing base pad shown on the plans.

All vault openings shall be blocked out prior to casting. No field cutting shall be allowed without prior approval of the Engineer. Pipe, fittings and fixtures shall be installed and located as shown on the plans, with types of mountings indicated in

the specifications. Make sure fixtures are thoroughly clean and free of any foreign material. Connections shall be made so as to be water tight. Flush and disinfect as specified. Furnish all required personnel and equipment and make all tests required to demonstrate the integrity of the finished installation to the approval of the city. Exposed pipe, fittings, valves, and accessories within the vault shall be painted. See Paragraph 9-30.4(14), Painted Surfaces.

Excavation for the meter vaults and piping shall be in accordance with Section 7-10.

Installation, testing, and disinfection of pipe and fittings shall be in accordance with Section 7-11. Installation of valves shall be in accordance with Section 7-12.

Backfill shall be borrow structural fill material placed and compacted to 95% in accordance with Section 7-11.

Surface restoration shall be in accordance with Section 8-01 or 8-06, as applicable.

7-20.4 Measurement

Large meter installations will be measured per each by size of meter installed. (Project Special Provisions may modify this section.)

7-20.5 Payment

Payment will be made on the following bid item when it is included in the proposal:

1. "Large Meter _____ inch Installation" per each. The unit price per each for "Large Meter _____ inch Installation" shall be considered full pay for all work to install the large meter including but not limited to excavating, tapping the main, laying and jointing the pipe and fittings, backfilling, testing, flushing and disinfection. (Project Special Provisions may modify this section).

DIVISION 7
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
WATERMAINS AND CONDUITS

7-21 PRESSURE REDUCING VALVE STATION (NEW SECTION)

7-21.1 General

This work consists of installing pressure reducing stations at locations as shown on the plans. The station shall be adjusted to control downstream pressure as determined by the Engineer.

7-21.2 Materials

Materials shall meet the requirements of the following sections:

| | |
|------------------------------|------------|
| Crushed Surfacing Course Top | 9-03.9(3) |
| Fittings | 9-30.2 |
| Gate Valve | 9-30.3(1) |
| Butterfly Valve | 9-30.3(3) |
| Air Release/Vacuum Valve | 9-30.3(7) |
| Precast Vault | 9-30.4(4) |
| Pressure Reducing Valve | 9-30.4(6) |
| Pressure Relief Valve | 9-30.4(7) |
| Pressure Gauge Assembly | 9-30.4(8) |
| WYE Strainer | 9-30.4(9) |
| Adjustable Pipe Supports | 9-30.4(12) |

7-21.3 Construction Requirements

The excavation for vaults shall be sufficient to leave 1 foot clear between the outer surfaces of the vault and the trench wall. If the material in the bottom of the trench is unsuitable for supporting the vault, remove the unsuitable material as directed by Engineer and replace with ballast. Set the vault to the grade and location shown on the plans.

All vault openings shall be blocked out prior to casting. No field cutting shall be allowed without prior approval of the Engineer. Pipe, fittings and fixtures shall be installed and located as shown on the plans, with types of mountings indicated in the specifications. Make sure fixtures are thoroughly clean and free of any foreign

material. Connections shall be made so as to be water tight. Flush and disinfect as specified. Furnish all required personnel and equipment and make all tests required to demonstrate the integrity of the finished installation to the approval of the city. Exposed pipe, fittings, valves, and accessories within the vault shall be painted. See Paragraph 9-30.4(14), Painted Surfaces.

7-21.4 Measurement

PRV stations will be measured per each size of station installed. (Project Special Provisions may modify this section).

7-21.5 Payment

Payment will be made on the following bid item when it is included in the proposal:

1. "PRV Station ____ inch diameter" per each.

The unit price per each for "PRV Station ____ inch diameter" shall be considered full pay for all work to install the PRV station including but not limited to excavating, tapping the main, laying and jointing the pipe and fittings, backfilling, testing, flushing and disinfection. (Project Special Provisions may modify this section).

DIVISION 9
DRAINAGE STRUCTURES, STORM SEWERS,
SANITARY SEWERS, WATERMAINS AND CONDUITS

9-05 DRAINAGE STRUCTURES, CULVERTS AND CONDUITS

9-05.12 Polyvinyl Chloride (PVC) Pipe

9-05.12(1) Solid Wall PVC Sanitary Sewer Pipe

Delete the first subparagraph and substitute the following:

"Solid Wall PVC sanitary sewer pipe shall conform to meet requirements of ASTM D 3034, SDR 35 for pipe up to 15-inch diameter."

9-05.12(2) Profile Wall PVC Sanitary Sewer Pipe

Delete the first subparagraph and substitute the following:

"Profile Wall PVC sanitary sewer pipe shall meet the requirements of ASTM F 794 series 46. The maximum pipe diameter shall be specified in the qualified products list."

9-05.13 Ductile Iron Sewer Pipe

Modify the second subparagraph as follows:

Revise "Class 50" to read "Class 52".

Modify the fourth subparagraph as follows:

Revise "cast iron fittings may" to read "ductile iron fittings shall".

Add the following paragraph:

"Ductile iron pipe shall be used in instances where the depth to the invert of the pipe is greater than 15 feet, or as approved by the Engineer. Pipe material shall remain the same between manholes. Ductile iron sewer pipe, shall be lined with Lafarge Calcium Aluminate mortar, Sewpercoat™, or ceramic epoxy lined with Protecto 401™. Sewer pipe shall be Griffin H2S Sewersafe™, or other approved pipe manufacturers, lined with Protecto 401™."

9-05.14 ABS Composite Sewer Pipe

There are no amendments or modifications.

9-05.15 Metal Castings

9-05.15(1) Manhole Ring and Cover

Add the following paragraph:

"Ring and cover shall be Olympic Foundry No. 52C with 230L bolt on cam-type locking device, Sather Manufacturing 230L, or approved equal. Cover shall be marked "SEWER" in three (3) inch raised letters, and marked "CITY OF REDMOND". Cover shall be provided with one lift hole positioned on the side with the cam device. Ring and cover countries of origin shall be United States and Canada, no other countries of origin shall be allowed."

9-05.21 Manhole Steps (New Section)

Manhole steps shall be polypropylene plastic conforming to ASTM D401, injected molded around a one-half ($\frac{1}{2}$) inch diameter, Grade 60, steel reinforcing bar, conforming to ASTM A-615. Steps shall be M. A. Industries Incorporated, Model No. P52-PF; or Lane International Corporation, Model No. P-14938; or approved equal.

9.05.22 Manhole Ladders (New Section)

Manhole ladders shall be polypropylene plastic conforming to ASTM D4101. Rungs of the ladder shall be injected molded polypropylene around a one-half ($\frac{1}{2}$) inch diameter, Grade 60, steel reinforcing bar, conforming to ASTM A-615. Rails of the ladder shall be polypropylene extruded over a nine-sixteenth ($\frac{9}{16}$) inch diameter cold drawn round bar conforming to ASTM C-1018. Ladders shall meet all ASTM C-497 load requirements and shall be Lane International Corporation, Model No. P-5625-50; or approved equal. Ladders shall be attached to the wall of the manhole with a $\frac{1}{2}$ " x $2\frac{3}{4}$ " stainless steel stud anchor.

DIVISION 9
DRAINAGE STRUCTURES, STORM SEWERS, SANITARY SEWERS,
WATERMAINS AND CONDUITS

9-30 WATER DISTRIBUTION MATERIALS

There are no amendments or modifications.

9-30.1 Pipe

There are no amendments or modifications.

9-30.1(1) Ductile Iron Pipe

Modify the last statement of subparagraph 1 as follows:

"...all other ductile iron pipe shall be standard thickness Class 52 or the thickness..."

Add the following subparagraphs:

"4. Ductile iron pipe shall be manufactured in the United States or Canada. No other countries of origin will be allowed.

5. Ductile iron pipe with threaded flanges shall meet the requirements of AWWA C-115 and all threaded flanges shall be ductile iron."

9-30.1(2) Vacant

There are no amendments or modifications.

9-30.1(3) Vacant

There are no amendments or modifications.

9-30.1(4) Steel Pipe

9-30.1(4)A Steel Pipe (6-inches and over)

There are no amendments or modifications.

9-30.1(4)B Steel Pipe (4-inches and under)

Add the following to the first paragraph:

"Steel pipe 4-inches and smaller shall be schedule 40."

9-30.1(5) Polyvinyl Chloride Pipe

9-30.1(5)A Polyvinyl Chloride Pipe (4 inches and over)

There are no amendments or modifications.

9-30.1(5)B Polyvinyl Chloride Pipe (under 4-inches)

There are no amendments or modifications.

9-30.2 Fittings

There are no amendments or modifications.

9-30.2(1) Ductile Iron Pipe

Add the following to the paragraph:

"Ductile iron fittings conforming to AWWA C-153 shall be class 350. Flange-type fittings shall meet the requirements of AWWA C-115 and shall be ductile iron. Flanges shall be faced and drilled to 125 pound ANSI template. Bolts shall be steel as specified in the appendix of AWWA C-115. 'Uniflanges' are prohibited. Ductile iron fittings shall be Clow, Tyler, Union, US Pipe or Griffin Pipe. No other manufacturers will be allowed."

9-30.2(2) Vacant

There are no amendments or modifications.

9-30.2(3) Vacant

There are no amendments or modifications.

9-30.2(4) Steel Pipe

9-30.2(4)A Steel Pipe (6-inches and over)

There are no amendments or modifications.

9-30.2(4)B Steel Pipe (4-inches and under)

There are no amendments or modifications.

9-30.2(5) Polyvinyl Chloride Pipe

9-30.2(5)A Polyvinyl Chloride Pipe (4-inches and over)

There are no amendments or modifications.

9-30.2(5)B Polyvinyl Chloride Pipe (under 4 inches)

There are no amendments or modifications.

9-30.2(6) Restrained Joints

Delete this section in its entirety and substitute with the following.

"Restrained joints for mechanical joints shall be US Pipe Mechanical Joint Gripper Gland, Romac Grip Ring, Uniflange Series 1400, or Mega Lugs. Restrained joints for push on type joints shall be US Pipe field-lok gasket. No other restraint systems shall be used."

9-30.2(7) Bolted, Sleeve-Type Couplings For Plain End Pipe

Modify the paragraph as follows:

"...constructed with ductile iron sleeves and ductile iron followers. Bolts and nuts shall be corten steel..."

Add the following to the paragraph:

"Manufacturer shall be Romac, Smith Blair, or approved equal."

9-30.2(8) Restrained Flexible Couplings

There are no amendments or modifications.

9-30.3 Valves

Add the following to the paragraph:

"Each valve bonnet shall be covered by 2 inch thick "ethafoam" donut ring sized for the valve box."

9-30.3(1) Gate Valves (3-inches to 12-inches)

Delete this section in its entirety and substitute with the following:

"Gate valves 2-inches through 12-inches shall be of the resilient wedge type, and shall conform to the requirements of AWWA C-509. All interior various parts,

including the interior of the gate or wedge shall be coated with fusion bonded epoxy with a minimum thickness of 8 ml. Said coating shall be non-toxic, impart no taste to water and shall conform to AWWA C-550.

"Gate valves smaller than 2-inches for buried service shall be iron bodied, non-rising stem with bronze double wedge disc rated for service at 300 PSIG non-shock WOG. Valves shall have joints compatible with the pipe to which they are connected.

"Gate valves smaller than 2-inches for exposed service shall be bronze-bodied double wedge disc gate valves. Valves shall have joints compatible with the pipe to which they are connected. Valves shall have a handwheel operator."

9-30.3(2) Gate Valves (14-inches and 16-inches)

There are no amendments or modifications.

9-30.3(3) Butterfly Valves

There are no amendments or modifications.

9-30.3(4) Valve Boxes

Add the following to the paragraph:

"The cover shall be a "lug" type cover, shall seat at least 1-½ inch into the box, and shall be a of a heavy duty design such that traffic will not dislodge the cover from the box. All valve boxes shall be subject to approval for use by the Engineer prior to installation in the field. Lugs shall align with the direction of the water main."

9-30.3(5) Valve Marker Posts

Modify the second paragraph as follows:

"The exposed portion of the marker post shall be coated with two coats of concrete paint Canary Yellow, Far West Paint Company, 260 or approved equal. Posts shall be located within the right-of-way or utility easement."

9-30.3(6) Valve Stem Extensions

Modify the second sentence as follows:

"Valves with an operating nut more than 36 inches..."

9-30.3(7) Combination Air-release/Vacuum Valves

There are no amendments or modifications.

9-30.3(8) Tapping Tee

Rename this section. Delete the paragraph in its entirety and substitute the following:

"Tapping sleeves shall be Romac 304 stainless steel tapping sleeve with stainless steel or ductile iron flange."

9-30.4 Miscellaneous

9-30.4(1) Meter Boxes - Concrete (New Paragraph)

Concrete meter boxes for air valve and blowoffs, shall be Fogtite No. 2 with steel cover.

9-30.4(2) Plastic Film Wrap (New Paragraph)

Plastic film wrap shall be 8-mil polyethylene meeting the requirements of AWWA C105.

9-30.4(3) Not Used

9-30.4(4) Large Meter/PRV Vaults (New Paragraph)

Vaults shall be Utility Vault Company designed for H-20 loading capacity or approved equal. The access door shall be Bilco or equal and shall be aluminum channel frame design or approved equal. The door shall have stainless steel hardware, recessed hasp for padlock with hinged lid flush with surface. The channel drain shall be piped through brass and PVC piping to drain. The ladder shall be aluminum designed in accordance with WISHA.

9-30.4(5) Casing Spacers (New Paragraph)

Spacers for positioning water and sewer pipelines within casings shall be APS Model SSI, or approved equal. The band shall be 14 gauge and the risers shall be 10 gauge T-304 stainless steel. Runners shall be 2" wide UHMW Polymer plastic. The liner shall be .090" thick polyvinyl chloride. The carrier pipe shall be centered within the casing with all runners of the spacer touching the inside wall

of the casing. The carrier pipe within the casing shall be restrained using the materials specified in 9-30.2(6). The quantity of runners and the dimensions between spacers shall be as specified by the manufacturer or as shown on the approved construction drawings, whichever is more stringent. End seals are required to seal casing ends and shall be APS Model AC, or approved equal.

9-30.4(6) Pressure Reducing Valve (New Paragraph)

Valves 4-inch and larger shall be Clayton series 92-01 pressure reducing and sustaining valve. Valves shall be equipped with the following:

Main Valve Body and Cover: Ductile Iron ASTM A-536

Main Valve Trim (Disc Guide, Seat & Cover Bearing): Stainless Steel

Disc: Buna-N Synthetic Rubber

Diaphragm: Nylon Reinforced Buna-N Rubber

Stem, Nut and Spring: Stainless Steel

Pilots and Solenoids: CRD & CRL

Pilot Control: Bronze ASTM B62

Pilot Control Tubing and Fittings: Stainless Steel Type 303

Pilot System: Shutoff Cocks on the Pilot Control System, plugs in other valve body taps

Flow Clean Strainer

Valve Position Indicator

Speed Controls: Opening and closing

Epoxy Coating: 4 mil fusion bonded both inside and out

End Details Flanged: Ductile iron ANSI B16.42 150A

Valves 3-inch and smaller shall be Clayton 90-01 pressure reducing and sustaining valve and shall be equipped with the same accessories as a 4-inch and larger valves, with the following exception, ***End Details Screwed:*** 250 & 300 ANSI B2.1. Adjustment ranges shall be determined for each valve and shall be designated on the plans. Valves shall be CLA-Val Company. No other manufacturers will be allowed.

9-30.4(7) Pressure Relief Valve (New Paragraph)

Pressure relief valves shall be Clayton Series 50-01 pressure relief valve. Valves shall be equipped with the following:

Main Valve Body and Cover: Ductile Iron ASTM A-536

Main Valve Trim (Disc Guide, Seat and Cover Bearing): Stainless Steel

Disc: Buna-N Synthetic Rubber

Diaphragm: Nylon Reinforced Buna-N Rubber

Stem, Nut and Spring: Stainless Steel

Pilots and solenoids: CRD

Pilot Control: Bronze ASTM B62

Pilot Control Tubing and Fittings: Stainless Steel Type 303

Pilot System: Shutoff Cocks on the Pilot Control System, plugs in other valve body taps

Valve Position Indicator

Epoxy Coating: 4 mil fusion bonded both inside and out

End Details Flanged: Ductile iron ANSI B16.42 150A

Adjustment ranges shall be determined for each valve and shall be designated on the plans. Valves shall be CLA-Val Company. No other manufacturers will be allowed.

9-30.4(8) Pressure Gauge Assembly (New Paragraph)

Pressure gauge shall be 2½ inch No Shok 25.300-200 psi or equal. Pressure gauge ranges shall be determined for each gauge and designated on the plans. Pressure gauge assembly shall include a brass ¼-inch shut-off cock and brass needle valve. All assembly pipe shall be brass.

9-30.4(9) "Y" Type Strainer (New Paragraph)

"Y" type strainers shall be Muessco #751 or equal with stainless steel screen.

9-30.4(10) Anchor Bolts (New Paragraph)

Anchor bolts shall be in accordance with ASTM A307. All anchor bolts, nuts and washers shall be stainless steel in all locations. Anchor bolts shall be Hilti Kwik bolt anchor or equal.

9-30.4(11) Expansion Bolts (New Paragraph)

Bolts, nuts and washers shall be 303 or 304 stainless steel; wedges shall be double plated spring steel.

9-30.4(12) Pipe Supports and Brackets (New Paragraph)

Pipe supports and brackets shall be equal to Fee and Mason. Adjustable pipe supports shall be equal to #291. Pipe brackets shall be equal to #155, heavy welded steel bracket with #1590 anchor chair. Three fourths-inch tubing brackets shall be equal to #327B, one hole clamp. Drain pipe supports shall be uni-strut. All supports and brackets shall be galvanized.

9-30.4(13) Exposed Polyvinyl Chloride Pipe (PVC Pipe Smaller Than 4") (New Paragraph)

PVC pipe which is not buried shall be schedule 80 and shall be in accordance with ASTM D1785. Joints shall be solvent weld socket or threaded. Solvent cement shall be in accordance with ASTM D2564.

9-30.4(14) Painted Surfaces (New Paragraph)

All exposed piping, fittings, valves and appurtenance surfaces shall be painted except non-ferrous, corrosion resistant ferrous alloys, and non-metallic materials. The painting system shall be a 2-component epoxy polyamide primer with an aliphatic polyurethane finish coat. Prime and finish coats shall each be a minimum 3 mils dry film thickness. Primer shall be Far West Paint X6390 and Finish coat shall be Skythane. Tnemec Series High Build Epoxoline and Series 73 Endurashild are acceptable substitutes. No other paint brands shall be used. No bleed through of the pipe bituminous coating shall be permitted. Prepare pipe surface as recommended by the paint manufacturer. Paint color shall be Far West Paint 391, Sea Green.

9-30.4(15) Brass Piping (New Paragraph)

Brass piping shall conform to ASTM B43.

9-30.5 Hydrants

Add the following to the paragraph:

"Hydrants shall be manufactured by Darling Manufacturing Company (B62B), Clow Corporation (F2500 or Medallion), Dresser Manufacturing (M & H 929), or

Mueller Company (A-423). Hydrants shall be painted with two coats of an alkyd enamel. Color shall be Farwest Paint 260 (Canary Yellow)."

9-30.5(1) End Connections

There are no amendments or modifications.

9-30.5(2) Hydrant Dimensions

Add the following subparagraph to the paragraph:

"The pumper nozzle shall be 4½ inch size with national standard thread and shall be equipped with a 5-inch Storz adapter fitting. The Storz fitting shall be installed after pressure test of the system."

9-30.5(3) Hydrant Extensions

There are no amendments or modifications.

9-30.5(4) Hydrant Restraints

Delete this paragraph in its entirety and substitute with the following:

"Hydrant restraints shall be restrained joint pipe meeting the requirements of section 9-30.2(6)."

9-30.5(5) Traffic Flange

There are no amendments or modifications.

9-30.5(6) Guard Posts

Delete this paragraph in its entirety and substitute with the following:

"Guard posts for hydrants shall be provided as shown on City of Redmond Standard Details. Guard posts shall be timber posts treated with pentachlorophenol in accordance with section 9-09.3(3) of the Standard Specifications."

9-30.6 Water Service Connections (2-inches and smaller)

9-30.6(1) Saddles

Delete the paragraph in its entirety and substitute with the following:

"Saddle bodies shall be ductile iron meeting the requirement of ASTM A-536. All saddles shall have double straps which are stainless steel or epoxy coated

steel. All saddles shall have iron pipe standard tapping with iron pipe threads. All saddles shall be protected with corrosion resistant paint or nylon coating, the standard of the manufacturer. Manufacturer shall be Romac, Smith-Blair, or approved equal."

9-30.6(2) Corporation Stops

There are no amendments or modifications.

9-30.6(3) Service Pipes

9-30.6(3)A Copper Tubing

There are no amendments or modifications.

9-30.6(3)B Polyethylene Pipe

Delete the last 2 sentences and substitute with the following:

"Tubing shall be SIDR 7 (iron pipe size)."

9-30.6(4) Service Fittings

Add the following to the paragraph:

"Fitting shall be Ford Pack Joint design."

9-30.6(5) Meter Setters

Add the following to the paragraph:

"Meter setters shall be Ford Company or Mueller Company. Meter setters shall be horizontal inlet and outlet type, except 1½" and 2" meter setters which may be vertical inlet and outlet type. Meter setters for a ⅝-inch x ¾-inch and 1-inch services shall be of the inverted key valve type with O-ring seal. Meter stops shall have swivel type nuts for installation of meter and union end connections. Meter setters for 1½-inch and 2-inch meters shall be of the ball valve inlet type. The bypass ball valve shall have lock wings. The meter setter model numbers for the Ford and Mueller Company are as follows:

Meter Setters (continued from previous page)

| <u>Meter Size</u> | <u>Mueller</u> | <u>Ford</u> |
|---------------------|----------------|--|
| 5/8 inch x 3/4-inch | H-1404-2x12" | VH72-12W-11-33 |
| 1-inch | H-1404-2x12" | VH74-12W-11-44 |
| 1½-inch | H-1423-2x12" | VBH76-12B-11-66 or VBH 86-12B-11-66 |
| 2-inch | H-1423-2x12" | VBH77-12B-11-77 or VBH87-12B-11-77 |

9-30.6(6) Bronze Nipples and Fittings

There are no amendments or modifications.

9-30.6(7) Meter Boxes - Standard

Add the following to the paragraph:

"Meter boxes shall be polyethylene meter box by Carson Industries, Inc., Concrete Meter Box with Steel Cover by Fogtite, Inc., or Olympic Foundry Junction Box Frame and Cover (no exceptions). The Olympic Foundry Junction Box shall be used in concrete sidewalks, in driveways or other paved travel ways for 5/8 inch x 3/4-inch and 1-inch meters. The concrete meter box shall be used in concrete sidewalks, not in drive areas. All other applications will require the polyethylene meter box. All polyethylene meter boxes shall have solid lids. The meter box model numbers for the various single meter sizes are as follows:

| <u>Meter Size</u> | <u>Carson Model No.</u> | <u>Olympic Foundry Model No.</u> | <u>Fogtite Model No.</u> |
|-------------------|-----------------------------|--------------------------------------|------------------------------|
| 5/8 x 3/4-inch | 1419 | Sm 29 | No. 1 |
| 1-inch | 1324 | Sm 30 | No. 1 |
| 1-1/2-inch | 1730 (18" Deep) | | No. 2 |
| 2-inch | 1730 (18" Deep) | | No. 2 |

Meter boxes of materials other than polyethylene shall only be used when specifically called out on the construction drawings and when approved by the Engineer. Provide additional expansion joints in concrete sidewalks where meter boxes are in the sidewalk as directed by the Engineer."

9-30.6(8) Tracer Wire (New Section)

"Tracer wire shall be number 12 gauge insulated solid copper wire."

9-30.6(9) Meters (New Section)

Water meters shall be new and of the latest design of the manufacturer. Meters shall conform to AWWA Standards C-700-77. Meters shall be Sensus Touch Read Convertible (TRC) type meters with radio read accessories or approved equal. Where directed, the City will provide and install only meters 2 inches and smaller at the City's standard rates. Acquisition and installation of meters larger than 2 inches shall be coordinated through the Engineer. Meters larger than 2 inches shall be Sensus compound meter type.

Meter assemblies including all pipe and fittings shall be installed as per the City of Redmond Standard Details or as directed by the Engineer.